

Correlation of age and BMI, smoking, alcohol in relation to H. Pylori infection in suspected barrett's oesophagus

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Abstract

Background: Helicobacter pylori infection is highly prevalent worldwide. The association between obesity and H. pylori infection is controversial in the literature. Recent studies of H. pylori and obesity have revealed that obese individuals have a higher prevalence of H. pylori infection. **Methods:** A total of 23 patients who underwent upper GI Endoscopy visiting tertiary care hospital in Tumkur were selected. All the cases were suspected for Barrett's Oesophagus. Biopsy was taken in all the cases. **Results:** 11(47.8%) patients had BMI of 18.5-25 followed by 7(30.4%) patients with < 18.5 BMI. H pylori infection was found in 2 patients who had BMI 18.5 – 25. In 19(82.6%) cases there was no history of smoking, among them 2 cases were positive for H Pylori infection. In 20(87%) cases there was no history of alcohol consumption, among them 2 cases were positive for H Pylori infection. **Conclusion:** There was no association found between H Pylori infection and age, BMI, smoking, alcohol.

Key Words: H. pylori, Barrett's oesophagus, BMI, Smoking, Alcohol.

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INTRODUCTION

Helicobacter pylori infection is highly prevalent worldwide. The association between obesity and H. pylori infection is controversial in the literature.¹ Obesity has increased rapidly worldwide in the past few years, particularly in developing countries. Urbanization, lifestyle changes and an unhealthy energy-dense diet, contribute to obesity in our country, where one-in-four adult is overweight.² Recent studies of H. pylori and

obesity have revealed that obese individuals have a higher prevalence of H. pylori infection.^{3, 4} The association between Body mass index BMI and H. pylori infection was significant across all socioeconomic status, sex, ethnicity, and age categories.⁵ A recent ecological review of several cross sectional studies found an inverse correlation between H. pylori prevalence and rate of overweight/obesity in countries of the developed world i.e., increase in H. pylori positive infection associated with reduction in obesity.⁶ This was further corroborated with Intervention studies reporting that eradication of H. pylori was associated with significant weight gain as compared to subjects with untreated H. pylori.^{7,8} In contrast, observational or clinical studies from developing countries reported a linear relationship between H. pylori positive infection and obesity.^{9,10,11} This study aims to investigate the prevalence of H. pylori infection and its relation with body mass index, age, smoking and alcohol in suspected Barrett's oesophagus patients.

METHODS

A total of 23 patients who underwent upper GI Endoscopy visiting tertiary care hospital in Tumkur were selected. All the cases were suspected for Barrett's Oesophagus. Biopsy was taken in all the cases. The study was conducted from January 2019 to June 2019. All these patients were explained regarding the type of procedure and consent was taken. Diagnosis of infection with H. pylori was made by Rapid Urease test.

Study design: An observational clinical study. Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups, Non-parametric setting for Qualitative data analysis. Fisher's Exact test used when cell samples are very small. The Statistical software namely SPSS 18.0, and R environment ver.3.2.2 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

RESULTS

There were total of 23 cases investigated for suspected Barrett's oesophagus. 13(56.5%) were male and 10(43.5%) female. Highest number of cases were seen in age group 51-60 years which was 7(30.4%) cases followed by 61-70 age group which was 6(26.1%) cases. Barrett's Oesophagus was seen in 13(56.5%) patients and absent in 10(43.5) patients. Only 2(8.7%) patients were detected with H Pylori infection and both were male. 11(47.8%) patients had BMI of 18.5-25 followed by 7(30.4%) patients with < 18.5 BMI. H pylori infection was found in 2 patients who had BMI 18.5 – 25. In 19(82.6%) cases there was no history of smoking, among them 2 cases were positive for H Pylori infection. In 20(87%) cases there was no history of alcohol consumption, among them 2 cases were positive for H Pylori infection.

Table 1: Age and gender distribution of patients studied

Age in years	Gender		Total
	Female	Male	
<30	0(0%)	1(7.7%)	1(4.3%)
30-40	1(10%)	1(7.7%)	2(8.7%)
41-50	1(10%)	1(7.7%)	2(8.7%)
51-60	4(40%)	3(23.1%)	7(30.4%)
61-70	2(20%)	4(30.8%)	6(26.1%)
>70	2(20%)	3(23.1%)	5(21.7%)
Total	10(100%)	13(100%)	23(100%)

P=0.976, Not Significant, Fisher Exact Test

Table 2: BMI (kg/m²) distribution of patients studied

BMI (kg/m ²)	No. of patients	%
<18.5	7	30.4
18.5-25	11	47.8
25-30	1	4.3
>30	4	17.4
Total	23	100.0

Table 3: Age and BMI correlation with H Pylori of patients studied

variables	Hpyloric		Total (n=23)	P value
	No (n=21)	Yes (n=2)		
Age in years				
• <30	1(4.8%)	0(0%)	1(4.3%)	0.435
• 30-40	1(4.8%)	1(50%)	2(8.7%)	
• 41-50	2(9.5%)	0(0%)	2(8.7%)	
• 51-60	6(28.6%)	1(50%)	7(30.4%)	
• 61-70	6(28.6%)	0(0%)	6(26.1%)	
• >70	5(23.8%)	0(0%)	5(21.7%)	
BMI (kg/m ²)				
• <18.5	7(33.3%)	0(0%)	7(30.4%)	0.696
• 18.5-25	9(42.9%)	2(100%)	11(47.8%)	
• 25-30	1(4.8%)	0(0%)	1(4.3%)	
• >30	4(19%)	0(0%)	4(17.4%)	

Chi-Square/Fisher Exact Test

Table 4: H Pylori/Smoking/Alcohol distribution of patients studied

	No. of patients (n=23)	%
Hpyloric		
• No	21	91.3
• Yes	2	8.7
Smoking		
• Nil	19	82.6
• 1PACK/DAY	2	8.7
• 20BEEDS/DAY	1	4.3
• 40BEEDS/DAY	1	4.3
Alcohol		
• Nil	20	87.0
• 180ML/DAY	1	4.3
• 200ML/DAY	1	4.3
• WEEKLY	1	4.3

Table 5: Gender distribution of patients studied in relation to H Pyloric

Gender	Hpyloric		Total
	No	Yes	
Female	10(47.6%)	0(0%)	10(43.5%)
Male	11(52.4%)	2(100%)	13(56.5%)
Total	21(100%)	2(100%)	23(100%)

P=0.486, Not Significant, Fisher Exact test

Table 6: Correlation of clinical variables of patients studied in relation to incidence H Pyloric

	Hpyloric		Total (n=23)	P value
	No (n=21)	Yes (n=2)		
Smoking				
• Nil	17(81%)	2(100%)	19(82.6%)	1.000
• 1PACK/DAY	2(9.5%)	0(0%)	2(8.7%)	
• 20BEEDS/DAY	1(4.8%)	0(0%)	1(4.3%)	
• 40BEEDS/DAY	1(4.8%)	0(0%)	1(4.3%)	
Alcohol				
• Nil	18(85.7%)	2(100%)	20(87%)	1.000
• 180ML/DAY	1(4.8%)	0(0%)	1(4.3%)	
• 200ML/DAY	1(4.8%)	0(0%)	1(4.3%)	
• WEEKLY	1(4.8%)	0(0%)	1(4.3%)	

Chi-Square/Fisher Exact Test

DISCUSSION

There were total of 23 cases investigated for suspected Barrett's oesophagus. 13(56.5%) were male and 10(43.5%) female. Highest number of cases were seen in age group 51-60 years which was 7(30.4%) cases followed by 61-70 age group which was 6(26.1%) cases. Barrett's Oesophagus was seen in 13(56.5%) patients and absent in 10(43.5) patients. Only 2(8.7%) patients were detected with H Pylori infection and both were male. In the present study 11(47.8%) patients had BMI of 18.5-25 followed by 7(30.4%) patients with < 18.5 BMI. H pylori infection was found in 2 patients who had BMI 18.5 – 25. In a study the positivity rate for H. pylori among underweight, normal weight, overweight, and obese class I and class II or more was 55.6, 58.5, 63.0, 64.5, and 65.5%, respectively.⁵ In another study there were 373 (53%) male patients and 325 (47%) female. H. pylori infection was detected in 399 (57%). The mean age of the BMI-healthy was 38.4 ± 18 years. H. pylori infection prevalence was high in up to 50 years of age and reduced in the sixth decade. The prevalence of H. pylori infection was 15 (4%) in patients with low BMI. H. pylori infection was highly positive in obese 208 (76%) compared to those with normal BMI 65 (24%) ($P < 0.001$). There was no difference in the prevalence of H. pylori infection in BMI-healthy patients 65/168; 37% compared to those who were overweight 111/236; 63% ($P = 0.096$). However, H. pylori positivity was higher in obese patients 208/258; 65% compared to overweight 111/236; 35% ($P < 0.001$).¹² One more study revealed that of the 8820 participants enrolled, 3859 (43.8%) were positive for H. pylori infection. Overweight/obese participants showed a higher prevalence of H. pylori infection than that of lean participants, and a positive linear correlation between BMI and prevalence of H. pylori infection was observed. Both unadjusted and adjusted analysis revealed that BMI was significantly associated with risk factors of H. pylori infection.¹ In the present study 19(82.6%) cases there was no history of smoking, among them 2 cases were positive for H Pylori infection. A study on smoking influence on H Pylori infection it was found that current smokers had a 0.82 (0.74-0.91)-fold greater risk of H. pylori seropositivity than those who had never smoked. Current cigarette consumption showed a dose-dependently negative association with H. pylori seropositivity, and the association between smoking and H. pylori infection was strong in younger subjects.¹³ After controlling for socio-demographic confounders, smoking was found to significantly increase the likelihood of unsuccessful first-line treatment for H. pylori infection.¹⁴ In conclusion, in patients with functional dyspepsia, there is no significant association between active H. pylori infection and smoking consumption.¹⁵

In present study 20(87%) cases there was no history of alcohol consumption, among them 2 cases were positive for H Pylori infection. In a study it was found that current drinkers had a 0.88 (0.79-0.98)-fold greater risk of H. pylori seropositivity than those who had never drank alcohol. The volume of alcohol consumed showed a negative association with H. pylori seropositivity.¹³ Alcohol consumption appears to be associated with active H. pylori infection. It is postulated that alcohol consumption facilitates H. pylori infection, presumably by damaging the gastric mucosa and/or promoting H. pylori adherence to gastric mucosa.¹⁵ Alcohol consumption has multiple direct and indirect effects on the gastric mucosa, gastric emptying and acid secretion. Moderate consumption may invigorate the mucosal defense by its effects on prostaglandins. Literature review shows inconsistent and conflicting relationship of alcohol and Helicobacter pylori related gastric diseases.¹⁶

CONCLUSION

There was no association found between H Pylori infection and age, BMI, smoking, alcohol. Further prospective studies need to be conducted with a larger sample size to prove the presence or absence of association between H Pylori infection and the risk factors.

REFERENCES

1. Xu C, Yan M, Sun Y, Joo J, Wan X, Yu C *et al.* Prevalence of Helicobacter pylori infection and its relation with body mass index in a Chinese population. *Helicobacter*. 2014 Dec; 19(6):437-42.
2. Nanan DJ. The obesity pandemic-implications for Pakistan. *J Pak Med Assoc*. 2002; 52:342-346.
3. Hegde V, Dhurandhar NV. Microbes and obesity-interrelationship between infections, adipose tissue and the immune system. *Clin Microbiol Infect*. 2013; 19: 314-320.
4. Pasarica M, Dhurandhar NV. Infectobesity obesity of infectious origin. *Adv Food Nutr Res*. 2007; 52: 61-102.
5. Suki M, Leibovici Weissman Y, Boltin D, Itskoviz D, Tsadok Perets T. Helicobacter pylori infection is positively associated with an increased BMI, irrespective of socioeconomic status and other confounders: a cohort study. *Eur J Gastroenterol Hepatol*. 2018 Feb; 30(2):143-148.
6. Lender N, Talley N.J, Enck P, Haag S, Zipfel S, Morrison M. Associations between Helicobacter pylori and obesity - An ecological study. *Aliment. Pharmacol. Ther*. 2014; 40:24-31.
7. Kamada T, Sugiu K, Haruma K. Development of obesity and hyperlipidemia after eradication of Helicobacter pylori. *Nihon Rinsho*. 2005; 63(1):536-538.
8. Lane J.A, Murray L.J, Harvey I.M, Donovan J.L, Nair P, Harvey R.F. Randomised clinical trial: Helicobacter pylori eradication is associated with a significantly

- increased body mass index in a placebo-controlled study. *Aliment. Pharmacol. Ther.* 2011; 33:922–929.
9. Al-Akwaa A.M. Prevalence of *Helicobacter pylori* infection in a group of morbidly obese Saudi patients undergoing bariatric surgery: A preliminary report. *Saudi J. Gastroenterol.* 2010; 16:264–267.
 10. Papasavas P.K, Gagne D.J, Donnelly P.E, Salgado J, Urbandt J.E, Burton K.K, Caushaj P.F. Prevalence of *Helicobacter pylori* infection and value of preoperative testing and treatment in patients undergoing laparoscopic Roux-en-Y gastric bypass. *Surg. Obes. Relat. Dis.* 2008; 4:383–388.
 11. Xu C, Yan M, Sun Y, Joo J, Wan X, Yu C *et al.* Prevalence of *Helicobacter pylori* infection and its relation with body mass index in a Chinese population. *Helicobacter.* 2014; 19:437–442.
 12. Basit Siddiqui B, Javed Yakoob, Zaigham Abbas, Rabea Azmat, Syeda Sadia Fatima, Safia Awan. Distribution of *Helicobacter pylori* infection and abnormal body- mass index (BMI) in a developing country. *J Infect Dev Ctries* 2018; 12(5):342-346.
 13. Ogihara A, Kikuchi S, Hasegawa A, Kurosawa M, Miki K, Kaneko E, Mizukoshi H. Relationship between *Helicobacter pylori* infection and smoking and drinking habits. *J Gastroenterol Hepatol.* 2000 Mar; 15(3):271-6.
 14. David L, Boltin D *et al.* Smoking increases the likelihood of *Helicobacter pylori* treatment failure. *Digestive and Liver Disease.* July 2017; 49(7):764-768.
 15. Li Zhang, Guy D *et al.* Relationship between Alcohol Consumption and Active *Helicobacter pylori* Infection. *Alcohol and Alcoholism.* 2010; 45(1):89–94.
 16. Kanakala VV, Thomas J, Vijayaraghavan S. Alcohol Consumption and Active *Helicobacter Pylori* Infection. *Clinical gastroenterology and hepatology.* January 2017; 15(1): 18.

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